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Two new genera and nine new species of damselflies from a localized area in Minas Gerais, Brazil (Odonata: Zygoptera)

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Two new genera, *Franciscobasis* and *Franciscagrion*, and seven new species, i.e. *Acanthagrion franciscoi, Franciscobasis franciscoi, Franciscobasis sonia, Franciscagrion franciscoi, Franciscagrion longispinum, Minagrion franciscoi* and *Oxyagrion franciscoi*, are described and illustrated. In addition, two new species of *Peristicta* are reported and will be described elsewhere. All these species have been collected along a 600 m stretch of the headwaters of the São Francisco River, within the Serra da Canastra National Park, in the state of Minas Gerais, Brazil. The significance of this finding in such a small area is discussed.
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Keywords: *Franciscobasis* n. g; *Franciscagrion* n. g; *Acanthagrion*; *Minagrion*; *Oxyagrion*; Zygoptera; Savanna; Serra de Canastra National Park

Introduction

Biological assessments in protected areas constitute an important source of biodiversity knowledge, besides providing essential subsidies for the planning and implementation of conservation strategies, management and monitoring actions. A rapid assessment of the odonate fauna was conducted between October 2001 and May 2002 in the Serra da Canastra National Park, one of the largest protected areas within Brazil's Cerrado Province (savanna ecoregion), in the State of Minas Gerais. This study involved the sampling of 72 sites in the Park and surrounding areas, revealing 112 odonate species (Bedê & Machado, 2002), among which a taxon represented by a single specimen, most probably a new species and a new genus of Coenagrionidae was collected. In order to obtain more specimens of this taxon and to improve the characterization of

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the co-occurring odonate fauna, the junior author returned to the site known as "Nascente do São Francisco" (Springs of the São Francisco River), where the presumably new genus had been collected. It was then possible to collect a large series of the new species, thus confirming its generic status. Furthermore, the complementary assessment effort led to the finding of another new genus and seven new species of Coenagrionidae that are described herewith, along with a discussion regarding the significance of these findings. Five of the seven new species were named *franciscoi* as a homage to the São Francisco River, one of Brazil's main rivers, that originates in the Serra da Canastra National Park and its surroundings, in the State of Minas Gerais.

Material and methods

Collections of odonates were made in the early and late rainy season of 2014: 29 and 30 January; 18 and 19 February; 2 and 3 April; 29 and 30 April; 11 October and 22 November; and on 25 February 2015. Climate data were obtained from a meteorological station located approximately 14 km SE of the study site, in the municipality of Vargem Bonita (http://www.agritempo.gov.br). Collection permits were issued by Brazil's Chico Mendes Institute for Biodiversity Conservation – ICMBio (SISBIO # 42266–1). Type material is deposited at the A.B.M. Machado collection of the Department of Zoology, Instituto de Ciências Biológicas of the Universidade Federal de Minas Gerais. The venation nomenclature followed Riek and Kukalová-Peck (1984). Abbreviations: S1–S10, abdominal segments 1 to 10; Fw, forewings; Hw, hind wings, Px, postnodal crossveins.

Study area

The study area is located in the Serra da Canastra National Park (SCNP), southwestern Minas Gerais state, Brazil (Figure 1), at a tourist site popularly known as "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′36.9″S; 46°26′47.1″W). The site refers to a third order stream (*sensu* Strahler, 1957) at a crossing with the Park's main access road, whose catchment area is confined to the Canastra plateau (Chapadão da Canastra), a prominent quartzite rock massif of the Brazilian Cerrado. Collections were made along a 0.6 km stretch, extending some 300 m upstream and 300 m downstream of the road crossing, at a mean altitude of 1360 m asl. The stream is predominantly rock bottomed, 2.5–6 m wide and sided by tall grasses and moss mats (Figure 2a, b). The stream runs along broad floodplains, in a succession of long and deep pools and short riffles. The floodplains eventually flood during the rainy months, forming wide marsh tracts with numerous side pools amid tall grass tussocks.

The habitat of all the new species consists of fully exposed, deep ($>$ 1 m) rock-bottomed pools of dark, humic waters sided by tall grasses (Figure 2b), with frequent mats of *Sphagnum* moss at the water edge and scattered clumps of submerged macrophytes. During high water periods the water spreads over the broad floodplains, forming a marsh with numerous small side-pools of varied depth, surrounded by tall grass tussocks. The limnological characteristics of this stream were studied by Necchi, Branco, and Branco (2000).

The local climate corresponds to Köppen-Geiger's Cwb – warm temperate, with dry winter and temperate summer (Alvares, Stape, Sentelhas, Gonçalves, & Sparovek, 2014). The mean annual temperature ranges between 22°C and 23°C, with mean annual precipitation of 1478 mm, concentrated between October and March. The Canastra plateau's landscape is dominated by grasslands (campos limpos), interspersed with a dense network of clear, oligotrophic and acidic headwater streams (Figure 2a).

Taxonomy

Coenagrionidae

Acanthagrion franciscoi Machado & Bedê sp. nov. (Figure 3)

Etymology

Named after the São Francisco (Saint Francis) River, in whose headwaters the species was collected.

Specimens examined

Holotype ♂. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park, "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W), 18–19 February 2014, L.C. Bedê leg.

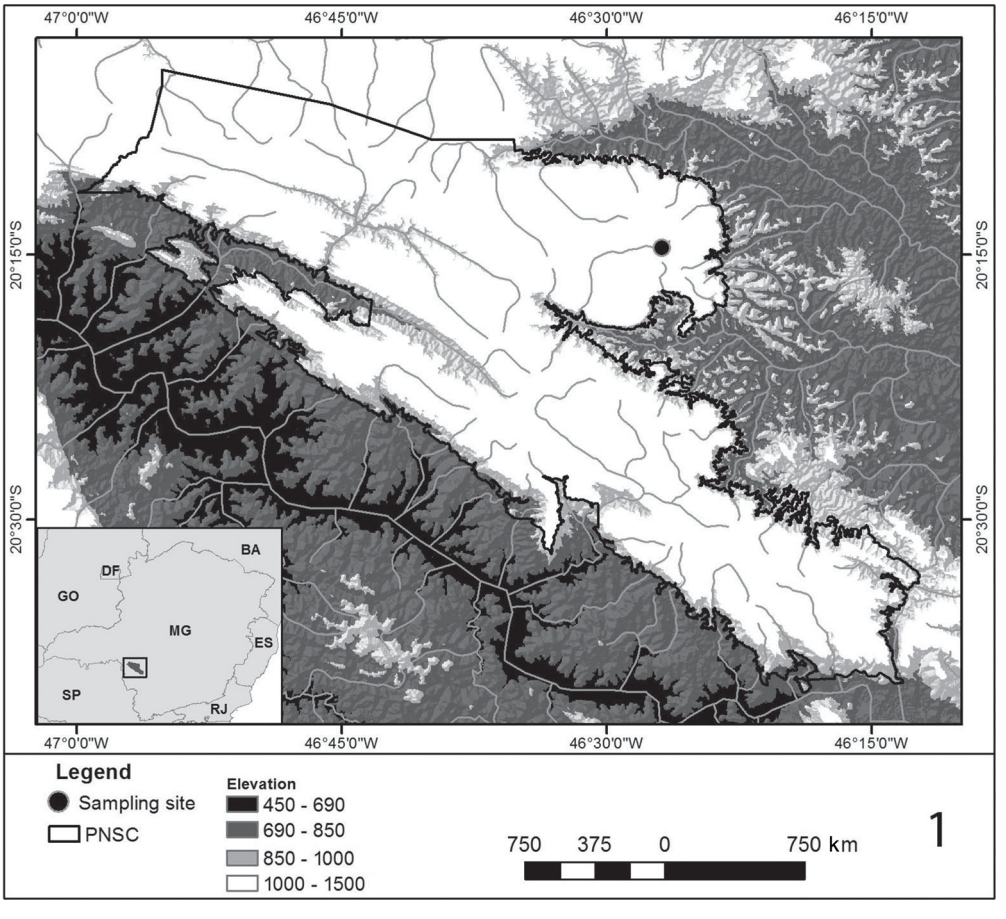

Figure 1. Location map of Serra da Canastra National Park. The black spot indicates the collecting site.

Figure 2. Collected area at the headwaters of the São Francisco River: (a) panoramic view; (b) margin of the São Francisco River showing the grass cover where most species have been collected.

Description of the ♂ holotype

Head: labrum blue with a posteromedial black spot and a pair of posterolateral triangular black spots; genae, base of mandibles and anteclypeus whitish yellow; postclypeus black, antefrons whitish yellow; upper part of head black, with the following pale markings: a bluish white stripe between eye and antennal base continuing with genae, a small bluish white stripe in front of median ocellus and a pair of blue rounded postocular spots not contiguous with blue occipital bar.

Thorax: pronotum anterior lobe yellowish, median and posterior lobes black with a lateral blue spot; propleuron bluish yellow. Pterothorax: mesepisternum and mesepimeron black with a blue

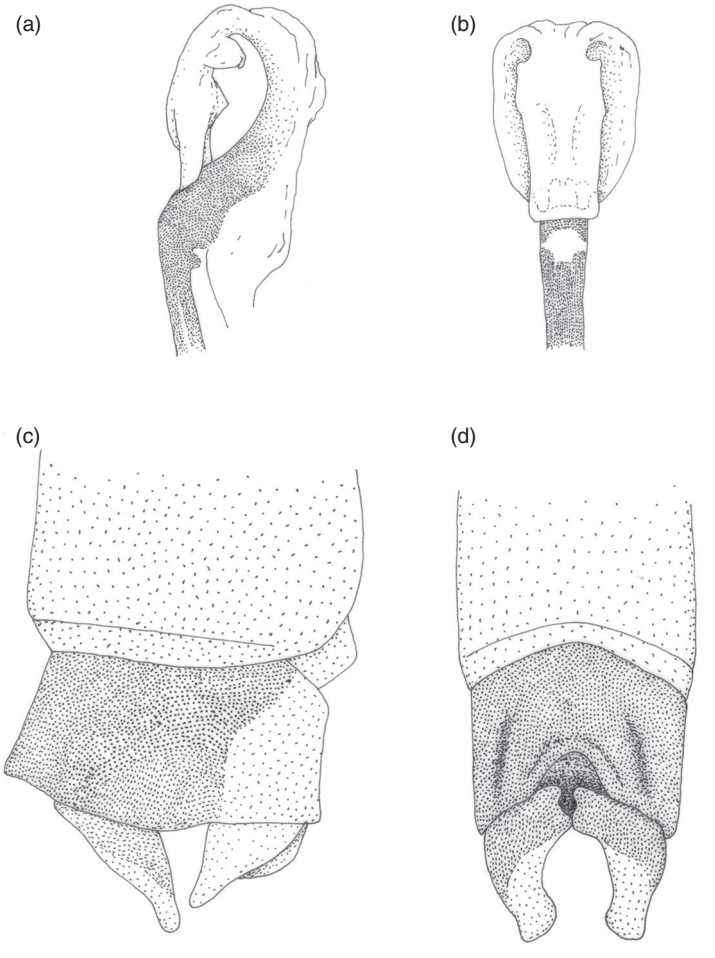

Figure 3. *Acanthagrion franciscoi* sp. nov.: male holotype genital ligula in lateral (a) and ectal (b) views; S10 and caudal appendages in lateral (c) and dorsal (d) views.

stripe along humeral suture, metepisternum blue, metepimeron pale blue. Legs: femora with extensor surfaces black, flexural surfaces whitish blue, tibiae and tarsi whitish yellow. Wings hyaline, pterostigma dark brown. Px in Fw 8, in Hw 7. RP2 in Fw and Hw originating at Px 4 petiolation in both wings distal to CuP by a distance about the length of CuP.

Abdomen: S1–S3 dorsally black, laterally whitish blue. S4–S7 dorsally black, laterally whitish yellow. S8–S9 blue, S10 black. Cerci laterally black, medially light brown. Paraprocts whitish yellow.

Structural characters

Median portion of hind prothoracic lobe almost straight, with a median cleft. Lateral lobes small. Genital ligula without inner and terminal folds (Figure 3a, b), in lateral view (Figure 3a) with a small triangular lateral lobe at midlength between apex and flexure and a larger one lateral with apex truncated proximal to it, in ectal view segment 3 subrectangular (Figure 3b).

Figure 4. Field photo of *Franciscobasis franciscoi* sp. nov. (holotype).

Hind border of S10 with a median cleft (Figure 3d). Cercus in lateral view slanting toward paraproct from base to apex (Figure 3c). Paraprocts strongly upcurved, slightly shorter than cercus.

Measurements (mm). Abdomen 17 mm, Hw 13 mm.

Remarks

Acanthagrion franciscoi fits none of the species groups defined by Leonard (1977). It keys out to couplet 7 in Leonard's key that leads to the *viridescens*, *adustum* and *chararum* groups. It differs from the species of the *viridescens* group by having the modifications of genital ligula segment 3 not visible in ectal view. It differs from the species of the *adustum* group because the distal part of genital ligula segment 3 is not incised. From the species of the *chararum* group it differs by having the cercus slanting forward relative to the paraprocts from base to apex. *A. franciscoi* differs from all known species of *Acanthagrion* by its small size (Rw 13.0 mm, Abd 17 mm), a character it shares only with *A. minutum* Leonard, 1977, regarded by Leonard (1977) as the smallest species of *Acanthagrion*. Since the size of the single specimen of *A. franciscoi* equals that of the smallest specimens of *A. minutum*, it is possible that the study of a larger series of *A. franciscoi* allowing the evaluation of its size variation might prove it actually to be the smallest species of *Acanthagrion*. *A. franciscoi* differs from *A. minutum* by having the distal border of segment 3 of genital ligula entire (bifid in *A. minutum*) and by the cercus slightly longer than paraprocts (slightly shorter in *A. minutum*).

Franciscobasis *Machado* & Bedê gen. nov.

Type species

Franciscobasis franciscoi sp. nov. by present designation.

Etymology

Named after the São Francisco River, in whose headwaters the type species was collected.

Generic characterization

Medium coenagrionids (total length ♂: 33.3 mm).

Male. Head: dominantly black with small pale postocular spots in the male, very large in the female. Frons rounded; location of most posterior point of head at eyes.

Thorax: hind prothoracic lobe with median and lateral portions well defined. Supplementary tooth of tarsal claw well developed, forming an acute angle with the claw. Wings (Figure 5b) hyaline, petiolated to level proximal to CuP by a distance about equal to length of CuP in Fw and 1/2 this length in Hw. CuA extending for 8–10 cells distal to vein descending from subnodus, not forming a straight line to wing margin; three postquadrangular cells in both wings. Metatibial spurs shorter than intervening spaces. Venter of male and female pterothorax with a mound-like median tubercle, visible in lateral view (Figure 5a). Genital ligula (Figure 6c, d) without inner fold, distal segment with a pair of moderately sclerotized apicolateral lobes, tapering to a fine acute sclerotized tip.

Abdomen: posterodorsal margin of S10 with a pair of small conical tubercles (Figure 6e). Male cercus much shorter than S10, approximately horizontal, entire, without lobes or processes, in dorsal view triangular divaricated (Figure 6e), in lateral view (Figure 6f) subtriangular, dorsally straight, ventrally convex, in mediodorsal view with a large excavation narrowed distally, with border almost completely ridged, originating from the inner surface of the excavation there a basomedial lobe (Figure 6g). Paraprocts small, triangular.

Female. Abdomen (Figure 6h) with a well-developed vulvar spine on S8, ovipositor not surpassing tip of cercus.

Remarks

In the key of Garrison, von Ellenrieder, and Louton (2010) *Franciscobasis* keys out to the North American genus *Zoniagrion*, and shares with it the presence of a mound-like tubercle on the venter of thorax, a character also shared in *Amphiagrion*, *Protallagma* and *Tukanobasis*. The main differences between *Zoniagrion* and *Franciscobasis* is the presence in the genital ligula of *Zoniagrion* of a transverse row of denticles lacking in *Franciscobasis*; in addition the appendages – especially the paraprocts – are large in *Zoniagrion* but poorly developed in *Franciscobasis*. From *Protallagma* it can be easily separated by the complex organization of the large appendages characteristic of that genus, in marked contrast to the small and simple appendages in *Franciscobasis*. This genus differs from *Tukanobasis* by a completely different genital ligula structure (Machado, 2009). *Franciscobasis* differs from *Amphiagrion* by a completely different genital ligula and appendage morphology. The cercus with a large medial excavation with ridged borders (Figure 6g) seems to be a unique character in Neotropical Coenagrionidae genera.

Franciscobasis franciscoi Machado & Bedê sp. nov. (Figures 4, 5, 6a–h)

Etymology

Named after the São Francisco River, in whose headwaters the species was collected.

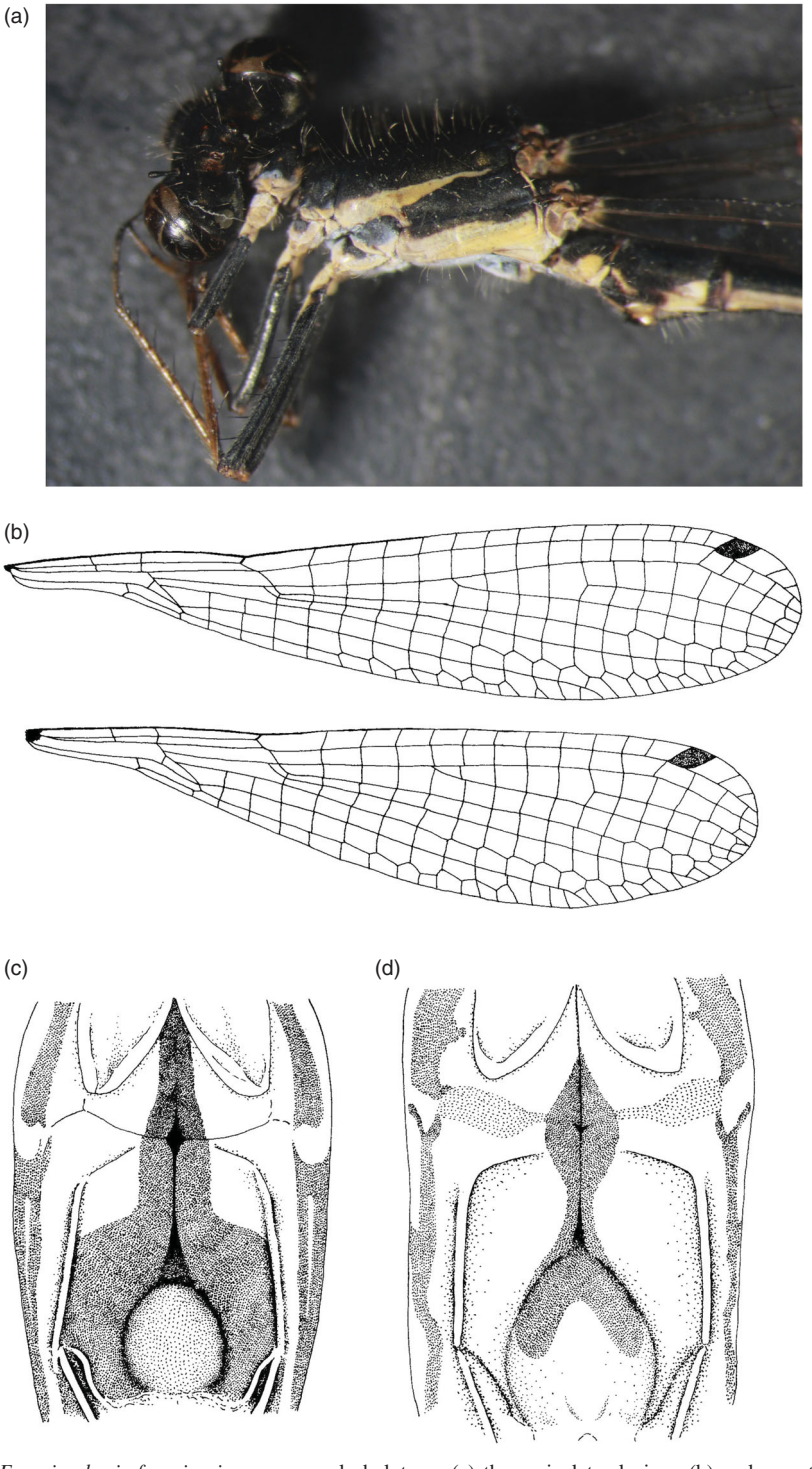

Figure 5. *Franciscobasis franciscoi* sp. nov.: male holotype; (a) thorax in lateral view; (b) male paratype, wings; (c) male holotype venter; (d) female allotype venter.

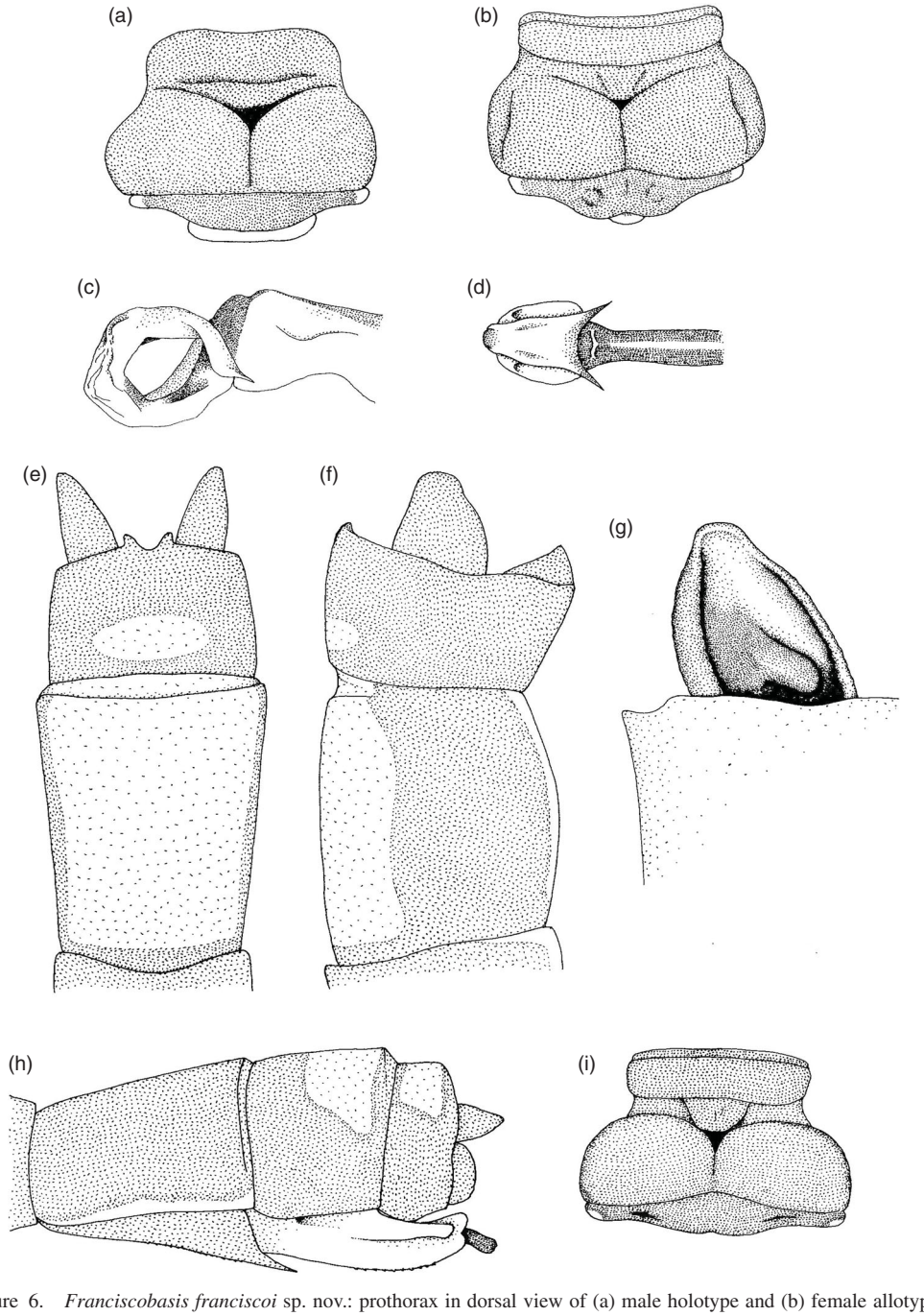

Figure 6. *Franciscobasis franciscoi* sp. nov.: prothorax in dorsal view of (a) male holotype and (b) female allotype; genital ligula of male paratype in (c) lateral and (d) ectal views; male holotype, S9–S10 and caudal appendages in (e) dorsal and (f) lateral.views; male paratype, (g) right cercus in medial view after removal of left cercus; (h) female allotype, S9–S10 in lateral view. (i) *Franciscobasis sonia* sp. nov.: female holotype, prothorax in dorsal view.

Specimens examined

Holotype ♂. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park. "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W), 29 April 2014, L.C. Bedê leg.

Allotype, 2 ♀, 1 ♂ same data as holotype; 2 ♂, 2 ♀ same data as holotype but 29–30 January 2014, 2 ♂, 2 ♀ same data as holotype but 18-19 January 2014, 1 ♂, 1 ♀ same data as holotype but 29-30 January 2014. 4 ♂, 3 ♀ same data as holotype but 2–3 April 2014, 2 ♂ same data as holotype but November 2014, 1 ♂ same data as holotype but 25 February 2015. Total: 20 ♂, 10 ♀.

Description of the ♂ holotype (Figure 4)

Head: labium whitish yellow, labrum and anteclypeus orange. Postclypeus black, base of mandibles and genae yellowish orange. Antefrons black, with a yellow line at the border with postclypeus. Antennae black, upper part of head black, with a small pale blue (Figure 4), rounded, postocular spot. Rear of head black.

Thorax: pronotum black, with the ventral lip of the medial portion of hind prothoracic lobe yellow. Propleuron yellow. Pterothorax (Figure 5a): mesopleuron black. Metepisternum black, with an orange yellow stripe at its anterior part tapering dorsally to a fine tip, not reaching upper part of sclerite. Metepimeron anteriorly black, medially whitish yellow, posteriorly orange yellow. Legs: femora black, proximal region and trochanter orange yellow, tibiae and tarsi brownish yellow. Wings hyaline, pterostigma red. Venation (Figure 5b): Px in Fw14, in Hw11; RP2 in Fw originating near Px 5, in Hw. nr. Px 4; in both wings, IR1 originating at the level of Px 9; postquadrangular cells in Fw and Hw 3; Ax 2, proximal to arculus by a distance about its anterior arm; petiolation proximal to CuP by a distance about equal to length of CuP in Fw and 1/2 of CuP in Hw, CuA extending for 10 cells distal to vein descending from subnodus. Venter of pterothorax (Figure 5c) largely black, covered with white pruinosity, black color continuing anteriorly as a median stripe reaching trochanters of hind legs; the hind part of this black area surrounding a yellow mound-like median tubercle.

Abdomen: S1 dorsally black, ventrally orange yellow, S2 black, posteroventrally orange yellow; S3–S6 dorsally black, laterally orange yellow. S7–S8 black. S9 laterally black, dorsally blue. Intersegmental membrane between S9–S10 blue. S10 black with a dorsobasal blue spot. Cercus laterally black, dorsally violet white at base, black distally. Paraprocts black laterally, yellowish white mediodorsally.

Structural characters

Hind prothoracic lobe (Figure 6a) with a rounded median two-lipped portion, lateral portion small, digitiform. Genital ligula distal segment (Figure 6c, d) with a pair of apicolateral lobes moderately sclerotized, tapering to a fine acute sclerotized tip.

Venter of pterothorax of both sexes with a mound-like median tubercle (Figure 5a) visible in lateral view. Dorsoposterior border of S10 with a pair of small conical tubercles (Figure 5e). Cercus as described for the genus.

Measurements (mm). Abdomen length 21.5–23.5, Hw length 14.4–15.0. Total length 26.0–28.0.

Variations in ♂ paratypes

In one paratype the venter of pterothorax has a large amount of whitish pruinosity partially concealing the yellow color of the tubercle. In three paratypes the dorsum of S10 is blue. In 20%

of the wings the pterostigma is light brown. In one male paratype the paraprocts are not visible in lateral view.

Description of the ♀ allotype

Head: labrum and anteclypeus orange, the former with a posteromedial black spot. Genae and base of mandibles yellow, postclypeus black, frons pale brown, upper part of head black. A large subtriangular postocular spot dorsally pale brown, becoming whitish yellow ventrally (Figure 7a).

Thorax: pronotum black, with a yellow spot at median portion of hind prothoracic lobe, propleuron whitish yellow. Pterothorax (Figure 7a): mesepisternum light brown. Middorsal carina, antealar sinus, acrotergal area and mesostigmal plates black. Lower 1/4 of mesepimeron and mesinfraepisternum black (Figure 7a). Dorsal 3/4 of mesepimeron anteriorly dark brown and white posteriorly. Metepisternum (Figure 7a) posteriorly black, anteriorly yellow at lower 1/3, whitish at middle 1/3 and grayish white at upper 1/3. Metepimeron anteriorly whitish, posteriorly yellow. A black stripe on each side of the 2nd lateral suture continuing to metinfrepisternum and separating the whitish area posteriorly and anteriorly. Venter of pterothorax yellow, with white pruinosity. A narrow midventral black stripe enlarged posteriorly partially surrounding yellow mound-like median tubercle. A narrow dark brown curved stripe at limit between lateral and ventral part of metepimeron. Legs (Figure 7a): extensor surface of femora black, flexor surface yellowish white. Tibiae and tarsi brownish yellow.

Abdomen (Figure 4): dorsally black with metallic green luster, ventrally yellow between S1–S8, S9–S10 black with a large bluish white spot dorsally in S9, continuing as a smaller one on S10. Cercus black.

Structural characters

Hind prothoracic lobe (Figure 6b) with the median portion medially two-lipped, lateral portion digitiform. Venter of pterothorax with a mound-like tubercle at its posterior part (Figure 7a). Cercus conical (Figure 6h), S8 with a well-developed vulvar spine. Ovipositor not surpassing tip of cercus.

Variations in ♀ paratypes

The frons is pale brown as in the allotype in 37.5% of the specimens, gray in 37.5% and orange yellow in 25%. The postocular spot is dorsally pale brown and ventrally whitish yellow as in the allotype in 62.5% of the specimens and uniformly gray in 37.5%. The mesepisternum is light brown as in the allotype in 50% of the specimens, brown in 40% and brownish orange in 10%.

A whitish area posterior to the humeral suture as in the allotype was present in 90% of the specimens.

Measurements (mm). Abdomen 23.0–24.5, Hw 15.0–15.2.

Remarks

A diagnosis between the females of *F. franciscoi* and that of *F. sonia* is given under the latter species.

Franciscobasis franciscoi was abundant throughout the 2014 sampling period (January–April), most frequently found perching near the water line on stems of tall grasses, which

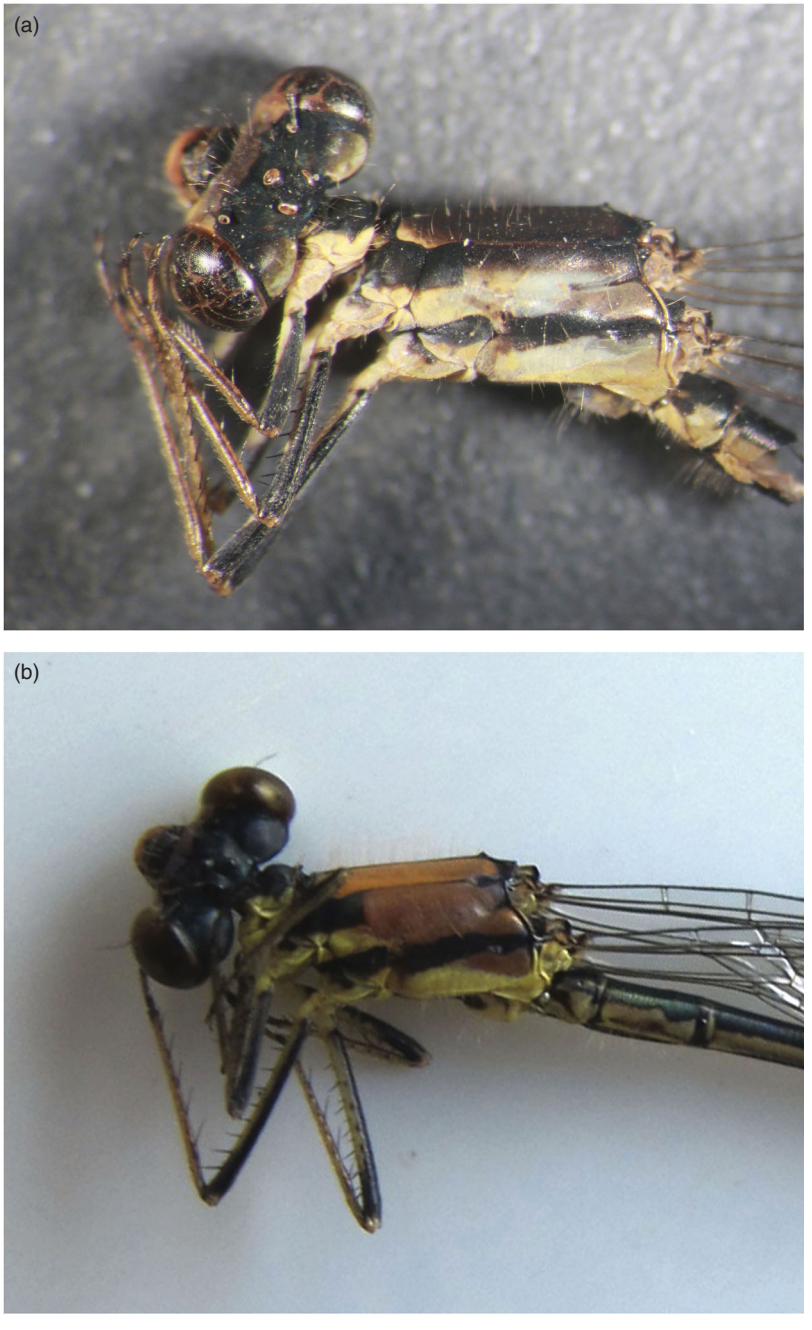

Figure 7. (a) *Franciscobasis franciscoi* sp. nov.: female allotype, head and thorax in lateral view. (b) *Franciscobasis sonia* sp. nov.: female holotype, head and thorax in lateral view.

seem to offer protection against the strong and constant wind in an altitudinal grassland area. While perching, both males and females of *F. franciscoi* could be detected mainly due to the bright blue mark at the abdominal tergites 9–10. It showed a sex ratio in the habitat of 50%, an unusual situation, for most Odonata species males are more numerous in the habitat than females (Corbet, 1999).

Franciscobasis sonia Machado & Bedê sp. nov. (Figures 6i, 7b)

Etymology

Sonia, noun in apposition, named in honor of the biologist Sonia Rigueira, head of Terra Brasilis Institute, in recognition for her important contribution to the conservation of odonates in the State of Minas Gerais.

Specimens examined

Holotype ♀. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park. "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W), 22 November 2014, L.C. Bedê leg. Two paratypes, same data as holotype and two paratypes same data as holotype, but 2/3 April 2014. Total: 5 ♀.

Description of the ♀ holotype

Head: labrum reddish orange with a posteromedian black spot connecting with a pair of black posterior lines. Genae and base of mandibles yellow. Anteclypeus reddish orange, postclypeus black, frons pale violet, upper part of head black with a large rounded pale violet postocular spot (Figure 7b). Rear of head black.

Thorax: pronotum black, except for yellow tip of lateral portion of hind lobe (Figure 6i). Propleuron yellow. Pterothorax (Figure 7b): mesepisternum reddish orange, a black line on the humeral suture enlarging as a black spot above. Lower 1/5 of mesepimeron black, dorsal 4/5 orange-red, mesinfraepisternum black. Metepisternum orange-red, with a small ventroposteriorly yellow triangular area. A black stripe along the 2nd lateral suture continuing onto mesinfraepisternum. Metepimeron yellow. Venter of pterothorax yellow, with a median black stripe diverging posteriorly, ending at each side of mound-like median tubercle; a dark brown stripe present posterolaterally. Wings hyaline, pterostigma silvery bordered with yellow. Venation: Px in Fw 12, in Hw 11. RP2 arising near Px 5 in Fw, and Px 4 in Hw. IR1 arising near Px 8. In both wings, CuA extending for 9 cells distal to the vein descending from subnodus. Petiolation in Fw proximal to CuP by a distance about equal to length of CuP, in Hw 1/2 of this length. Legs (Figure 7b) with a dorsoposterior orange-red triangular area, femora black on extensor and yellow on flexor surfaces. Tibiae yellow, tarsi brown.

Abdomen: S1–S8 dorsally black with some metallic luster, ventrally yellow, with proximal yellow rings. S9 black with a large pale violet dorsal spot. S10 dorsally pale violet laterally black, ventrally yellow. Cercus black. Ovipositor dorsally black ventrally yellow.

Structural characters

Median portion of hind prothoracic lobe single lipped with a shallow median concavity, lateral lobes slender and short (Figure 6i). Pterothoracic venter with a mound-like subcircular tubercle, visible in lateral view, covered with specialized hairs.

Abdomen: S8 with a well-developed vulvar spine. Cercus in lateral view triangular, ovipositors not surpassing tip of cercus.

Measurements (mm). Abdomen 21.9–22.2, Hw 15.0–15.2.

Remarks

The female of *F. sonia* shares with that of *F. franciscoi* the main characters that define the genus, including the presence of the mound-like ventral tubercle on the pterothorax. These two species can, however, be separated by characters shown in Table 1.

Table 1. Differences between the females of *Franciscobasis Franciscoi* and *Franciscobasis sonia*

Character	*F. franciscoi*	*F. sonia*
Postocular spot	Dorsally pale brown, ventrally whitish yellow (Figure 7a)	Homogeneous pale violet (Figure 7b)
Mesepisternum	Brown (Figure 7a)	Reddish orange (Figure 7b)
Mesepimeron (dorsal 3/4)	Anteriorly dark brown, posteriorly white	Orange red
Metepisternum	Dominantly pale (Figure 7a)	Dominantly orange red (Figure 7b)
Metepimeron	Without a dorsoposterior orange red marking (Figure 7a)	With a dorsoposterior orange red marking (Figure 7b)
Median portion of hind prothoracic lobe	With an yellow markings (Figure 6b)	Totally black (Figure 6i)

F. sonia was seen in low numbers in January, April and November 2014 and February 2015, occurring sparsely at perching sites very close to the water line, where they were highly visible under direct sunlight due to the bright, reddish orange thoracic marks. They were far less common than *F. franciscoi* and no male was found in spite of finding 5 females.

Franciscagrion Machado & Bedê gen. nov.

Type species

Franciscagrion franciscoi sp. nov. by present designation.

Etymology

Named after the São Francisco River, in whose headwaters the type species was collected.

Generic characterization

Small blue or yellow coenagrionidae (total length ♂: 23.7 mm)

Male. Head: face yellow or blue, upper part of head dominantly black with pale colors blue or yellow. Pale postocular spot rounded with a medial prolongation. Frons rounded. Location of most posterior point of head at eyes.

Thorax: hind prothoracic lobe with median and lateral portion well defined. Wings hyaline, petiolated at level of CuP. CuA extending four cells distal to vein descending from the subnodus, not forming a straight line to the wing margin. Three postquadrangular cells in all wings. Metatibial spurs shorter than intervening spaces. Supplementary tooth of tarsal claw well developed, forming an acute angle with the claw. Genital ligula (Figures 9c, 11c): segment 3 with a flagellum of moderate size (Figures 9c, 11c) inner fold present, plate-like, situated almost parallel to genital ligula segment 2.

Abdomen: S10 with a dorsoposterior notch (Figures 9d, 11d). Cercus approximately horizontal with a distoventral process and with a whitish pad at point of origin of the distoventral process (Figures 9e, 11e, f). In dorsal view the two cerci are divergent and each possesses a digitiform basomedial lobe (Figures 9d, 11d) whose tip meets at level of dorsoposterior notch of S10. The relationship of the distoventral process, basomedial lobe and the whitish pad is shown in Figure 11f.

Female. With a color pattern similar to that of the males, pale colors yellow or blue. A well-developed spine at S8, ovipositor not surpassing the tip of cercus.

Remarks

In the key of Garrison et al. (2010) *Franciscagrion* keys out to *Ischnura*. It differs from this genus by the presence of a whitish pad on the cercus (absent in *Ischnura*) and by CuP reaching CuP & AA in *Ischnura* and the wing margin in *Franciscagrion*. In addition, the genital ligula of *Ischnura* has a posteriorly directed spine proximal to flexure, lacking in *F. franciscoi*. However, the most important taxonomic character of *Franciscagrion* is the presence in the male cercus of a pair of digitiform basomedial lobes, whose apex meets near the dorsoposterior notch of S10 and is a continuation of the dorsal border of cercus (Figures 9d, 11d). Dorsomedial tubercles are present here as present in *Acanthagrion* and *Oxyagrion* but they are different in lacking the digitiform basomedial lobe of *Franciscagrion*. It is also very different from the basomedial lobe of *Franciscobasis* that originates in the inner side of the excavation. The only similar structure in any New World Coenagrionidae is the dorsomedial tubercle of *Amphiagrion*, a genus that otherwise is very different from *Franciscagrion*.

Franciscagrion franciscoi Machado & Bedê sp. nov. (Figures 8, 9)

Etymology

Named after the São Francisco River, in whose headwaters the species was collected.

Specimens examined

Holotype ♂. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park, "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W). 2/3 April 2014. L. Bedê leg. Allotype ♀, 2 ♂ and 2 ♀ paratypes same data as holotype; 1 ♂ paratype same data but 18 February 2014; 1 ♀, same data but 3 May 2014, 1 ♀ same data but May 2002, 1 ♀ paratype same data but 9 October 2014, 1♀ paratype 22 November 2014, 1 ♂, 1 ♀ paratypes same data as holotype but 25 February 2015. Total 5 ♂, 8 ♀. Also a field photo of a male (Figure 8).

Description of the ♂ holotype (Figure 8)

Head: face grayish green, except for transverse black stripe at hind part of postclypeus and a pair of black dots in front of it. Upper part of head black with the following yellowish markings: a small spot behind the antennal bases; a semicircular stripe connecting lateral ocellus to antennal base and continuing to median ocellus; the occipital bar and a subtriangular postocular spot with a medial prolongation. Rear of head yellowish white.

Thorax: pronotum: black median part of hind prothoracic lobe with an elongated yellowish white marking (Figure 9a), propleuron grayish green with a black stripe at its border with pronotum. Pterothorax (Figure 8): mesepisternum black, with a narrow grayish green humeral stripe. Mesepimeron black, with a narrow grayish green stripe along 2nd lateral suture. Metepisternum grayish green, metepimeron whitish yellow. Legs whitish yellow. Wings hyaline, pterostigma in Fw and Hw gray. Venation: Px in Fw 7 in Hw 8. RP2 in both wings arising near Px 3. IR1 in both wings arising near Px 5. Three postquadrangular cells in both wings. Arculus distal to 2nd antenodal by a distance of 1/2 the length of its upper limb. CuA in Fw extending for 3 cells distal to vein descending from the subnodus, in Hw 4 cells. Petiolation in Fw at CuP, in Hw proximal

Figure 8. *Franciscagrion franciscoi* sp. nov.: field photo (holotype).

to it by 1/3 of its length. In paratypes (3) petiolation in Fw proximal to CuP by 1/2 the length of CuP, in Hw by 1/3 of its length.

Abdomen (Figure 8): S1–S6 dorsally black with a distal black ring, laterally greenish blue (S2–S3), or blue (S4–S6). S7 black with a blue lateral streak at its proximal half. S8–S10 dorsolaterally blue. Cercus black with a distal yellowish brown pad.

Structural characters

Hind prothoracic lobe (Figure 9a): border of median portion rounded with two lateral convexities continuing to lateral lobes and an almost straight median portion that is yellow. Mesostigmal plates and acrotergal area as in Figure 9a. Genital ligula (Figure 9c) with terminal folds. Inner fold plate-like, attached to flexure disposed almost parallel to genital ligula segment 1 and slightly projected laterally (Figure 9a). Third segment with a pair of distolateral flagella directed dorsally and laterally at the extremities. S10 with a dorsoposterior notch. Cerci in dorsal view (Figure 9d) spatulate, strongly diverging with a basomedial lobe, each meeting medially, a whitish pad distomedially and a small rounded tubercle at midlength. In lateral view (Figure 9e) with a distoventral branch meeting paraproct. Paraprocts moderately large and sub rectangular (Figure 9e).

Measurements (mm). Abdomen 19.0–20.5, Hw 13.0–13.5.

Description of the ♀ allotype

Head: face and upper part of head similar to ♂ holotype except stripe connecting antennae base to lateral ocellus reduced to proximal half of antennal base.

Thorax: similar to that of the holotype male but the yellowish white marking of the hind prothoracic lobe is not elongated (Figure 9b).

Abdomen: S1–S7 similar to that of the male. S8–S9 black with small grayish blue spot, anteroventral on S8 and distal in S9. S10 and ovipositor grayish blue.

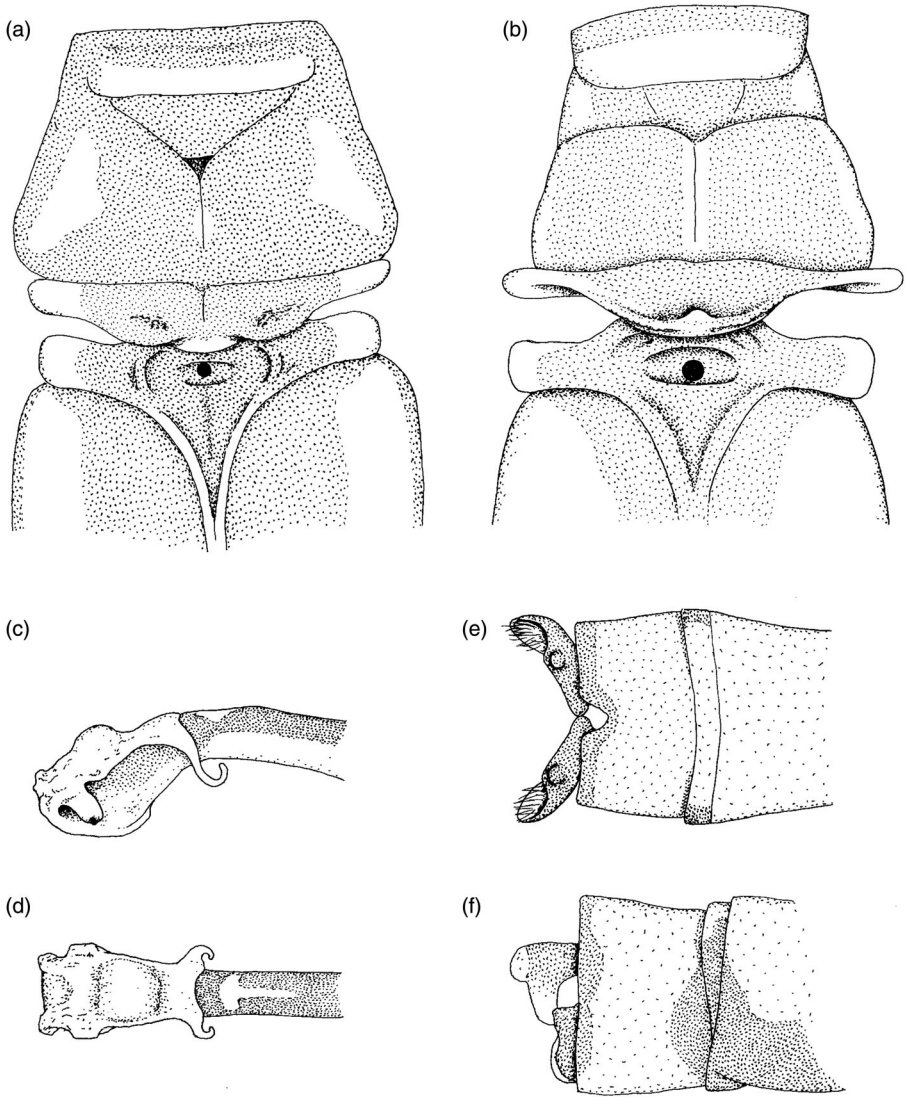

Figure 9. *Franciscagrion franciscoi* sp. nov.: Prothorax in dorsal view of (a) male holotype and (b) female allotype; genital ligula in lateral (c) and ectal (d) views; male holotype S9–S10 and caudal appendages in (e) dorsal, (f) lateral views.

Structural characters

Thorax: medial portion of hind prothoracic lobe (Figure 9b) smoothly rounded with a medial rounded white incisure. Female S8 without vulvar spine, ovipositor not surpassing the posterodorsal margin of S10.

Measurements (mm). Abdomen 18.0–19.4, Hw 13.3–13.6.

Franciscagrion longispinum Machado & Bedê sp. nov.

(Figures 10, 11)

Etymology

Longispinum, from Latin. A reference to the long and straight spine present in the genital ligula of this species.

Specimens examined

Holotype ♂. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park, "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W), November 2014. L.C. Bedê leg. 8 ♂ same data as holotype. Allotype ♀ and 5 ♂, same data as holotype but 9 October 2014, 1 ♂ and 1 ♀, same data as holotype but 29–30 April 2014. 2 ♂ paratypes same data as holotype but 2–3 April 2014. Total 15 ♂, 2 ♀.

Description of ♂ holotype (Figure 10)

Head: color pattern similar to that for *F. franciscoi* except that pale colors are yellow, not blue or bluish green.

Thorax: pronotum black with lateral parts and small median part of hind prothoracic lobe with yellow (Figure 11a). Pterothorax (Figure 10) with epimeron black, mesepisternum gray and metepimeron yellow. Wings hyaline, pterostigma gray. Venation: Px in Fw 8, in Hw 7, RP2 in Fw arising near Px 4 in Hw near Px 3. IR1 in Fw arising near Px 7, in Hw near Px 6, three postquadrangular cells in both wings, arculus distal to 2nd antenodal by a distance of 1/2 the length of its upper limb; CuA in both wings extending for 3 cells distal to vein descending from the subnodus, petiolation in both wings ending at CuP.

Abdomen: color as described for *F. franciscoi* except that S1–S6 are yellow, not blue or bluish green.

Structural characters

Hind prothoracic lobe (Figure 11a) with the median portion smoothly rounded, and continuous without demarcation with lateral portion (Figure 11a). Genital ligula (Figure 11c) with inner fold not projecting laterally, third segment with slender distolateral flagellum directed dorsally at the extremities; laterally with a single median lobe and a long oblique ventrodorsal spine

Figure 10. *Franciscagrion longispinum* sp. nov.: field photo (holotype).

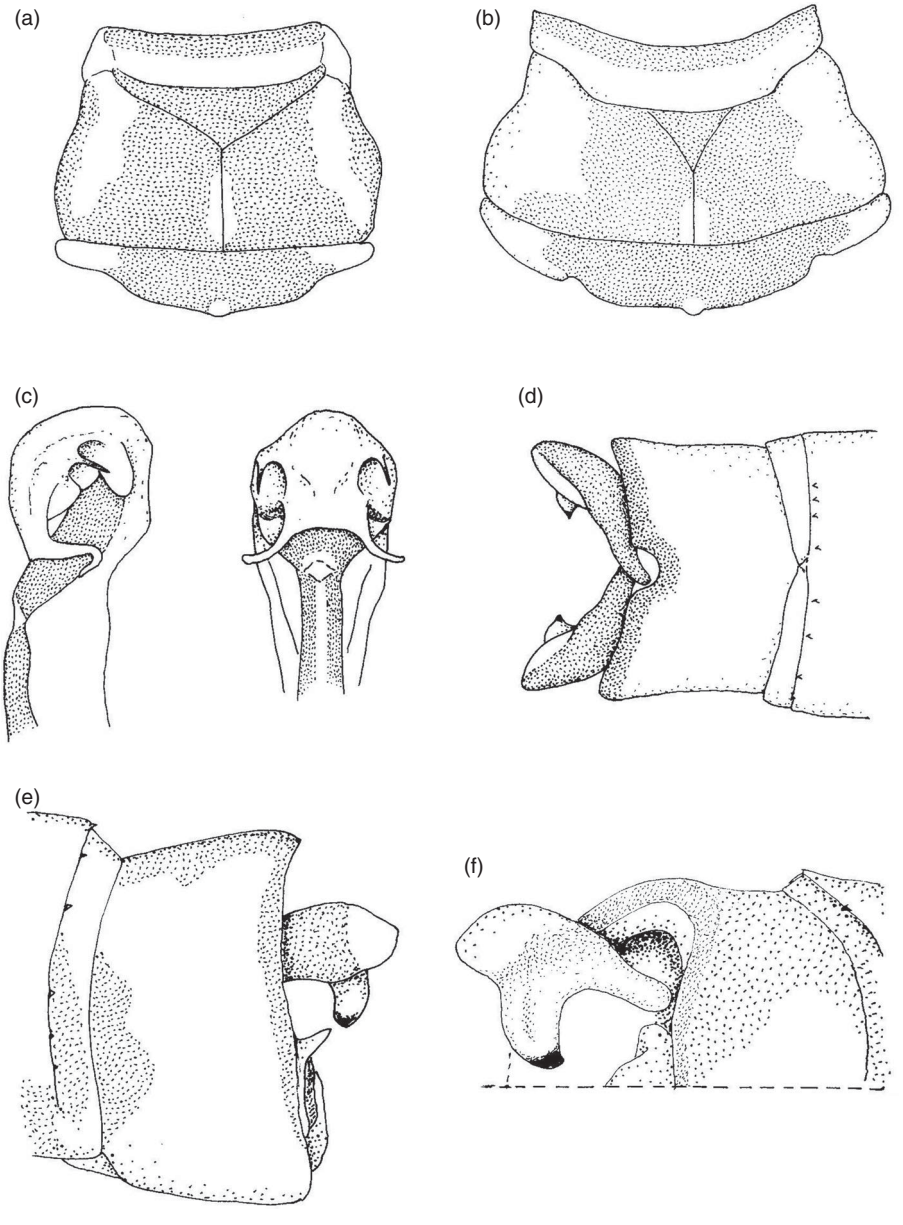

Figure 11. *Franciscagrion longispinum* sp. nov.: prothorax in dorsal view of (a) male holotype and (b) female allotype. (c) Genital ligula in ectal and lateral views. Male holotype (segments S9–S10 and caudal appendages) in (d) dorsal, (e) lateral and (f) mediodorsal views.

(Figure 11c, f). S10 with a posteromedial notch and two small projections laterally. Cercus horizontal with a strong distoventral process (Figure 11e) and a distomedial whitish pad (Figure 11e, f). Cerci in dorsal view diverging (Figure 11d), with a digitiform distomedial lobe, each meeting at the notch of S10 and with no rounded tubercle at midlength (Figure 11d). Paraprocts small with a blunt tooth directed dorsoposteriorly.

Measurements (mm). Abdomen, 20.6–21.4, Hw 13.2–14.0.

Table 2. Characters separating the male of *Franciscagrion Franciscoi* from that of *Franciscagrion Longispinum*

Character	*F. franciscoi*	*F. longispinum*
Abdominal pale colors	Blue or bluish green (Figure 8)	Yellow in S1–S6 (Figure 10)
Basomedial lobes of cerci	Short (Figure 9c)	Long (Figure 11d)
Penis segment 3	With a domelike structure. No unpaired median lobe and no spine (Figure 9c).	No domelike structure, with an unpaired median lobe and a long oblique spine (Figure 11c).
Paraprocts	Well developed subrectangular (Figure 9e)	Small, spiniform (Figure 11e)
Rounded tubercle in dorsal part of cercus	Present (Figure 9d)	Absent (Figure 11d)

Description of the ♀ allotype

Head: similar to that described for the male holotype except for the postocular spot prolonged medially almost reaching the occipital bar.

Thorax: color similar to that described for the male holotype. Venation: Px in Fw 8 and in Hw 8. PR2 in all wings arising near Px 3, IR1 in Fw arising near Px 7, in Hw near Px 8. Petiolation in both wings ending at CuP.

Abdomen: color of S1–S7 similar to that described for the male holotype. S8 black, S9 dorsoposteriorly blue, ventroposteriorly black, ventrally yellow. S10 dorsally blue, ventrally yellow. Cercus black, ovipositor yellow.

Structural characters

Hind prothoracic lobe with median portion separated from the lateral one by a small concavity (Figure 11b). Cercus conical, ovipositor, except stylus, reaching level of apex of cercus.

Measurements (mm). Abdomen 21, Hw 14.5.

Remarks

Franciscagrion franciscoi and *F. longispinum* have a similar pale and black color pattern, but the pale abdominal color in both sexes of *F. franciscoi* is blue whereas it is yellow on S1–S6 in *F. longispinum*. Other important structural differences are shown in Table 2.

Minagrion franciscoi Machado & Bedê sp. nov. (Figures 12, 13)

Etymology

This species is named after the São Francisco River, in whose headwaters the type species was collected.

Specimens examined

Holotype ♂. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park, "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W), 9 October 2014. L.C. Bedê leg. 5 ♂ paratypes same data as holotype, 2 ♂ paratypes same data as holotype but 30 January 2014, 1 ♂ paratype same data as holotype but 25 February 2015. Total: 9 ♂.

Figure 12. *Minagrion franciscoi* sp. nov.: field photo of a male, to document colors in life (specimen not collected).

Description of the ♂ holotype (Figure 13; Figure 12, of another male not part of the type series, is also cited to document colors in life)

Head: labium white, labrum and clypeus yellow, genae, base of mandibles and antefrons grayish blue. Upper part of head black with metallic green luster, a small area at the anterior part of postfrons grayish blue and occipital bar yellow.

Thorax: prothorax dorsally black, laterally grayish blue above, yellow below. Pterothorax (Figure 12): mesepistenum medially black, laterally grayish blue. A black line along the humeral suture enlarged above. A metallic green stripe occupying all mesepimeron, extending to mesinfraepisternum. Metepisternum whitish yellow with a few areas grayish blue. Metepimeron whitish yellow with an anterior stripe grayish blue. Legs whitish yellow. Wings hyaline, pterostigma brown. Venation: Px in Fw 8, in Hw 9. RP2 originating near Px 4 in both wings. IR1 originating near Px 7 in both wings. CuA in Fw extending four cells distal to the vein descending from subnodus, in both pairs of wings. Petiolation about the length of CuP in both pairs of wings.

Abdomen: S1 dorsally yellow, laterally yellowish white; S2–S5 yellow, S6–S7 grayish blue (blue in the living insect, as seen in Figure 12), with a black distal ring. S8 dorsally black,

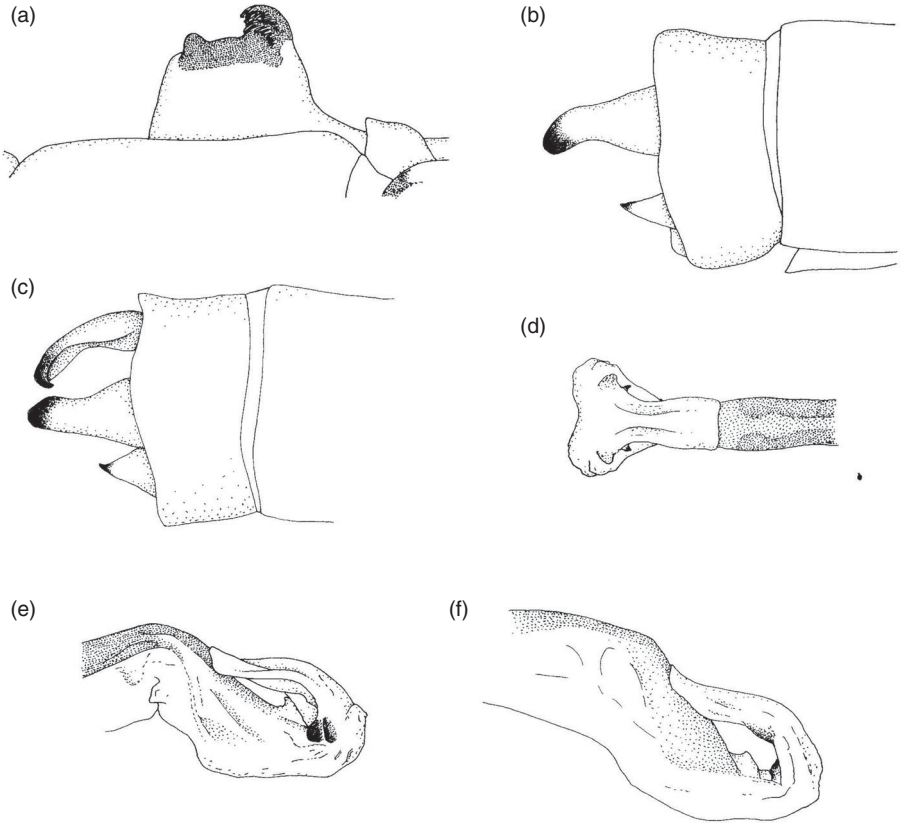

Figure 13. *Minagrion franciscoi* sp. nov.: male holotype tubercle of S1 in lateral view (a); S10 and appendages in lateral (b); and mediodorsal (c) views; genital ligula in ectal (d); and lateral (e) views. *Minagrion caldense*, paratype, genital ligula in lateral view (f).

laterally yellowish orange. S9–S10 yellowish orange. Cercus yellowish. Paraprocts bluish white.

Structural characters: hind prothoracic lobe smoothly convex. Tubercle on the ventral part of S1 cylindrical and excavated at the apex (Figure 13a). Cercus in lateral view (Figure 13b) with the distal 1/3 directed posteroventrally and slightly sclerotized. In dorsal view forcipate, in mediodorsal view (Figure 13c) with distal part ending in a small sclerotized incurved tooth. Paraprocts in lateral view triangular with a distal tooth (Figure 13b). Genital ligula with a well-developed inner fold and a pair of heavily sclerotized lateral processes (Figure 13e) that, in ectal view (Figure 13d), appears as a small spine-like process.

Variations in paratypes

Of the 5 paratypes collected in October 2014, two are semiteneral and have S6–S7 grayish blue.

Measurements (mm). Abdomen 22.3–22.5, Hw 14.0–14.2.

Remarks

The male of *Minagrion franciscoi* can be readily separated from the other five species of the genus by having S6–S7 blue in mature specimens (Figure 12). It shares with *M. caldense* Santos,

1965 the presence of an excavated tubercle in S1, whereas it is not excavated in the remaining species. In addition to the difference in the color of S6–S7, the male of *M. franciscoi* differs from *M. caldense* in having a mesepimeral black stripe occupying the entire extent of the sclerite whereas in *M. caldense* it is narrower, occupying only the posterior half of the sclerite. The heavily sclerotized lateral process of the genital ligula in *M. franciscoi* are separated (Figure 13e) whereas in *M. caldense* there is only one process (Figure 13f). In ectal view the lateral processes appear as a small spine-like process, whereas in *M. caldense* it appears as a large sclerotized mass. The female of *M. franciscoi* may be separated from that of *M. caldense* in having a mesepimeral black stripe lacking in *M. caldense*.

Two males of *Minagrion franciscoi* were first collected in January 2014, five males were taken in October 2014 and one male in February 2015. It was the only species of *Minagrion* found in the area in 2014, in contrast with collections made in 2001–2002, when *M. caldense* and *M. waltheri* (Selys, 1876) were present and abundant.

Oxyagrion franciscoi Machado & Bedê sp. nov. (Figures 14, 15)

Etymology

This species is named after the São Francisco River, in whose headwaters the type species was collected.

Specimens examined

Holotype ♂. Brazil, Minas Gerais State, municipality of São Roque de Minas, Serra da Canastra National Park, "Nascente do São Francisco" (Springs of the São Francisco River, 20°14′37″S, 46°26′47″W), 29/31 January 2014. L.C. Bedê leg. 1 ♂ paratype, same data as holotype; 2 ♂ paratypes same data but 18/19 February 2014; 1 ♂ paratype same data but 2/3 April 2014; 1 ♂ paratype same data but 29 April 2014, 1 ♂ paratype same data but November 2014. Total: 7 ♂, plus a field photo of male specimen (Figure 14).

Figure 14. *Oxyagrion franciscoi* sp. nov.: field photo (specimen not collected).

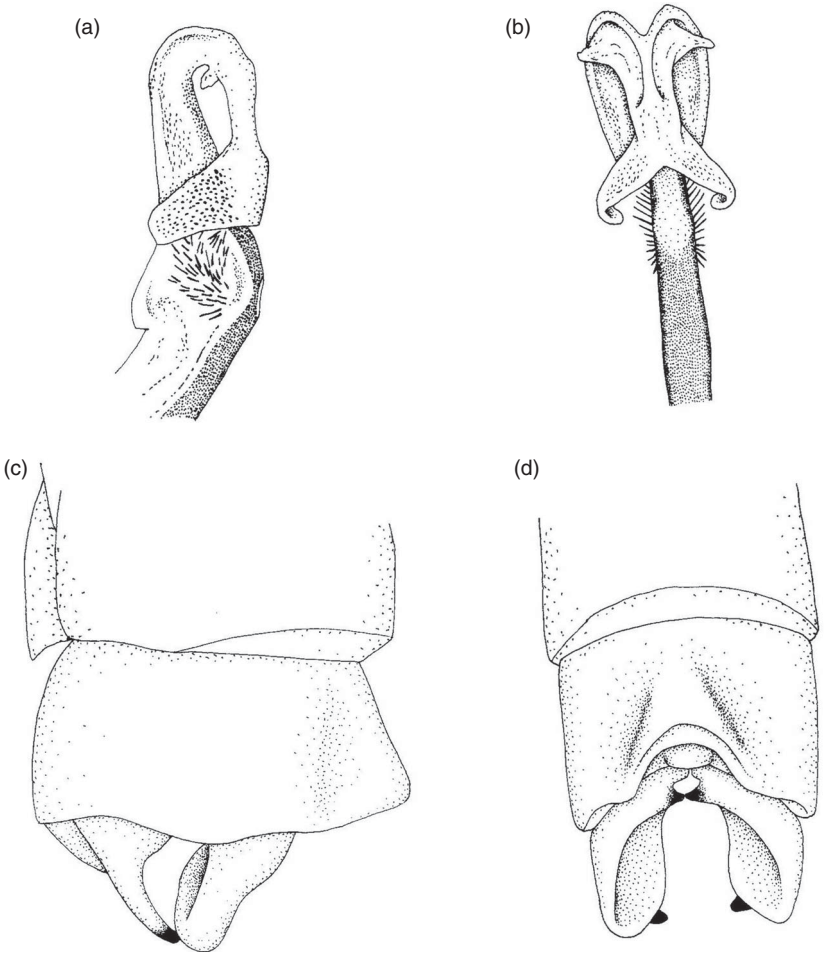

Figure 15. *Oxyagrion franciscoi* sp. nov.: holotype, genital ligula in (a) lateral and (b) ectal views; S10 and appendages in lateral (c) and dorsal (d) views.

Description of the holotype (Figures 14, 15)

Head: labrum grayish green, anteclypeus, genae and base of mandibles brown. Postclypeus, antefrons and upper part of head blue, stippled with black. A pair of curved black lines originating at eyes in the direction of the lateral ocellus, without reaching it, and a pair of short curved black lines medial to antennal base. Hind part of postocular lobe and occipital crest dark brown. Rear of head bluish white.

Thorax: prothorax: propleuron blue, dorsally dark brown. Pronotum blue with a middorsal black stripe. Pterothorax: mesepisternum blue stippled with black, except for the black middorsal carina and a line on the humeral suture enlarged dorsally. Mesepimeron anteriorly blue, posteriorly whitish yellow, with a dark brown area bellow. Metepisternum predominantly dark brown, bluish above. Metepimeron anteriorly whitish yellow, posteriorly brown with some whitish pruinosity. Legs light brown. Wings hyaline, pterostigma brown. Venation: Px in Fw 11, in Hw 10. RP2 arising near Px 5 in Fw, Px 4 in Fw and Hw. IR2 arising at Px 8 in Fw and Hw. Petiolation in Fw distal to CuP about 1/2 the length of CuP in Fw and 1½ in Hw.

Abdomen: S1–S6 whitish blue, ventrally orange yellow. S6–S10 dorsolaterally black, with some pruinosity on S9, ventrally orange yellow. Appendages light brown.

Structural characters

Hind prothoracic lobe rounded. Genital ligula in lateral view (Figure 15a) with the length distal to flexure considerably longer than the flexure surface, with pair of long distolateral lobes with apex curved medially (Figure 15b) and a small lateral lobe just distal to flexure (Figure 15a). A patch of small stiff, bristle-like brown setae attached to the membrane at the limit between segments 1 and 2 (Figure 15a), cercus in lateral view subrectangular (Figure 15c), in dorsal view (Figure 15d) with a dorsobasal tubercle. Paraproct in lateral view (Figure 15c) directed dorsally with the apex reaching near the tip of cercus.

Variations in paratypes

The proportion between the black and blue on the abdominal segments varies in each of the four paratypes, the blue reaching S3, S4, S5 and S6 as in the holotype. In 1 ♂ paratype the whitish blue occupies all abdominal segments similar to that of the specimen photographed in the field (Figure 14). In spite of being very different in abdominal coloration, the morphology of the appendages and the genital ligula of this specimen are identical to those of the other paratypes.

Measurements (mm). Abdomen 24.2–26.4, Hw 17.8–19.0, abdomen minimum width at S3: 0.72.

Remarks

Oxyagrion franciscoi is easily distinguished from all other congeners by its dominantly blue colors, a character it shares only with *Oxyagrion ablutum* (Calvert, 1909). The latter species was redescribed by Leonard (1977) under *Acanthagrion* and its main taxonomic characters were illustrated by Garrison et al. (2010) and von Ellenrieder and Lozano (2008). *O. franciscoi* differs from *O. ablutum* by having the blue abdominal segments between S3–S6 whereas in *O. ablutum* S1–S5 are black, S6–S10 blue. However, the main difference between these two species by the morphology of the genital ligula. In ectal view the distal border of segment 3 is entire in *O. ablutum* but is deeply cleft in *O. franciscoi*, forming two large distolateral lobes. The genital

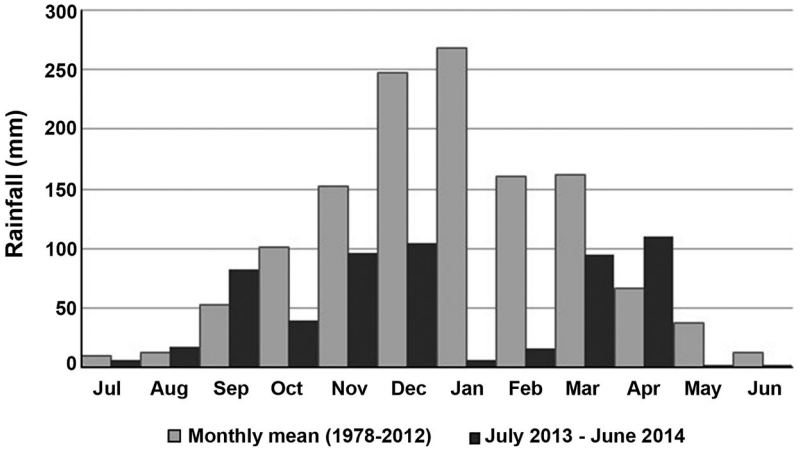

Figure 16. Pluviometric data for the collecting site.

ligula of *O. franciscoi* has a large patch of stiff bristle-like setae attached to the membrane at the border between segments 1 and 2; these bristles are lacking in *O. ablutum* and is probably a unique character of *O. franciscoi*. Furthermore, the genital ligula in *O. ablutum* in lateral view is C-shaped, whereas in *O. franciscoi* the length of genital ligula distal to flexure is considerably longer than the flexure surface, a character of *Acanthagrion*, according to von Ellenrieder and Lozano (2008). The minimum width of abdomen at S3 (0.7) is, however, a character of *Oxyagrion*.

Oxyagrion franciscoi was seen throughout the sampling period, although always in low numbers and was easily recognizable due to the bluish coloration of the entire body. Males were observed flying a little above the tall grass cover. It occurred together with *O. microstigma* Selys, 1876 and *O. santosi* Martins, 1976.

Protoneuridae

Three species of Protoneuridae were collected at the "Nascente do São Francisco": *Epipleoneura metallica* Racenis, 1955 and two species of *Peristicta*. *Epipleoneura metallica* was found at the site only on the collecting trips of 2001–2002, while in 2014 specimens of *Peristicta* were common in the area, being represented by two new species, *P*. n. sp. 1 and *P.* n. sp. 2. These will be described later, in another paper. *Peristicta* n. sp. 1 resembles *P. jalmosi* Pessacq & Costa, 2007 and *P. guarellae* Anjo-Santos & Pessacq 2013 by the presence in the genital ligula of a well-developed dorsal fold, but differs from these species by other characters of the genital ligula. *P.* n. sp. 2 differs from the other congeners mainly by having S9–S10 and part of cerci white.

Other species collected in the area

The following species were collected at the "Nascente do São Francisco" in the months of January, February and April 2014, and February 2015: *Anax concolor* Brauer, 1865; *Castoraeschna januaria* (Hagen, 1857); *Erythrodiplax fusca* (Rambur, 1842); *Erythrodiplax lygaea* Ris, 1911; *Hetaerina simplex* (Selys, 1853); *Lestes auritus* Hagen in Selys, 1862; *Homeura chelifera* Selys, 1876; *Oxyagrion microstigma* Selys, 1876; *Oxyagrion santosi* Martins, 1967; *Oxyagrion basale* Selys, 1876; *Telebasis* sp. (only photographed); and *Micrathyria stawiarskii* Santos, 1953. In addition to these, the following species were collected in 2001–2002: *Argia croceipennis* Selys, 1865; *Argia lilacina* Selys, 1865; *Telebasis carmesina* Calvert, 1909; *Minagrion caldensis* Santos, 1965; *Minagrion waltheri* (Selys, 1876); *Epipleoneura metallica* Racenis, 1955; *Peristicta* sp.; *Hetaerina longipes* Hagen in Selys, 1853; *Erythrodiplax juliana* Ris, 1909; *Erythrodiplax pallida* (Needham, 1904); *Oligoclada borrori* Santos 1945; and *Zonophora campanulata machadoi* St. Quentin, 1974.

Discussion

New taxonomic findings are not unusual in Neotropical odonate studies, evincing the contrast between the region's remarkable biodiversity levels and the paucity of faunistic assessments. This is particularly true as regards the Coenagrionidae in South America, which constitute a large proportion of the odonate species being described (Kalkman et al. 2008). In Brazil, De Marco and Viana (2005) revealed that the concentration of odonate species richness records in

the southeastern states of Rio de Janeiro, Minas Gerais and São Paulo reflected higher concentrations of both collection efforts and odonatologists in these states. The finding of new taxa should reasonably follow as a corollary. Nevertheless, the finding of two new genera and nine new species of Zygoptera along a 600 m stretch of a savanna stream in the Serra da Canastra National Park is interesting, given that these were collected over 40 hours only. Extensive odonate collections carried out by A.B.M. Machado over 60 years in 15 municipalities of Minas Gerais has resulted in 13 new species; in Rio de Janeiro, a much smaller state, extensive collection efforts by Prof. Newton Santos resulted in eight new species over 45 years and in São Paulo, F.A.A. Lencioni performed studies over 11 years in 10 municipalities that resulted in 10 new species. The outstanding results obtained at the headwaters of the São Francisco River illustrate the need for augmenting odonate assessment efforts to better gauge both known and unknown biodiversity values of remaining natural landscapes in the Neotropics. Because sampling outcome may be influenced by factors such as seasonality, local population density and species detectability, sampling modalities aimed at obtaining representative spectra of odonate species (e.g. Chovanec & Waringer, 2001; Schmidt, 1985) are likely to offer interesting results.

Two aspects deserve further comment regarding the finding of such a large pool of new taxa at a single site. The first relates to the environmental context of the study site, which combines the perenniality of a third order stream with the intermittent availability of associated stagnant water habitats on altitudinal floodplains and side pools, in a markedly variable setting as regards temperature, flow, duration and magnitude of floods. With a high level of spatiotemporal heterogeneity, riverine floodplain systems maintain a diversity of habitat and microhabitat types and are recognized as species-rich environments (Ward, Tockner, & Schiemer, 1999).

The second aspect refers to the influence of the atypical climatic conditions encountered during the 2014 sampling effort on the assessment results. The rainy season of late 2013/early 2014 saw a mere 33% of the average historical precipitation for this period (Figure 16), which resulted in the drying of the site's broad floodplain marsh and its shallow side pools. With the water confined to the mainstream channel, as observed in January and February of 2014, a concentration of the odonate specimens would have occurred near the stream channel, making it easier to detect and sample some of the otherwise elusive items of the local damselfly species pool.

The finding of such a high number of new Odonata taxa in the Serra da Canastra National Park is relevant to biodiversity conservation and science. The streams along its highest plateaus and surrounding mountain chains deserve further exploration in order to find out more about the distribution, habitat specificities and conservation status of this unique set of zygopteran species.

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